Illinois Mathematics and Science Academy
1500 Sullivan Road
Aurora, IL 60506-1000

Application For SIR Placement at Fermi National Accelerator Laboratory (FNAL)

(provide two recommendations – see rec form; please use a computer to complete this application legibly)

Name: Park (Last) Soo Min (Shannon) (First Middle) Date: 11/09/98 (month / day / year)

Home Address: 2533 Windrush Ln (Number and Street)

Northbrook (City) Illinois (State) (Zip Code) Home Telephone: 201-995-7703 (include area code)

Person to be notified in an emergency: Parents

Telephone (office hours): 201-995-7703 (include area code) Telephone (other hours): 647-962-1199 (include area code)

Student Cell Phone: 201-995-7726 Year of Graduation: 2017

Suggested FNAL Advisor:

Gender: ☐ male ■ female Age: 16 Country of Citizenship*: Republic of Korea

*Citizens other than from the United States must complete the following information:
Permanent Resident: ■ Yes ☐ No
Place of Birth: Seoul, Korea (City, State, Country)
Passport No.: M55927880 Expiration Date: 18/Dec/2017
All non-U.S. citizens must present their original, unexpired foreign passport on the first day of the program. Photocopies are not acceptable. Depending on your circumstances, you also must present:

- Form I-94 Arrival Departure Card that shows lawful admission to the U.S. and the end date of your "authorized stay", **PLUS**:
  - Form I-797 Notice of Action approving H-4, O-3, TD, E-3 or other nonimmigrant (temporary) visa status in the U.S. , OR
  - Form DS-2019 Certificate of Eligibility for J-2 status, OR
  - Form I-20 showing F-2 status, **OR**
- Greencard (Alien Registration Card, or I-551 Card) showing grant of lawful permanent resident status.

Describe your skills, abilities, proficiencies; please be honest.
Highest Math Level/Skill: I have taken BC Calculus as a Sophmore.

Skill with Statistics: I am knowledgeable in regression, correlation, t-test, anova, and descriptive statistics.

Science Classes: I have taken Honors Physics in freshmen year and Biology, Chemistry, and Physics in sophomore year. I am planning on taking Advanced Chemistry and Calc-based Physics (Mechanics and E/M) as a Junior. I have exceptional interest in Physics and Dr.Dong, my current Physics teacher, commented "[Shannon] showed an excellent knowledge of physics and a strong ability to solve problems in physics". Mrs.Scarano, my current Chemistry teacher, commented, "she understands the material better than most of her peers… I hope Shannon continues in chemistry she has a real talent for it".

Describe Your Laboratory Skills: I have taken Methods in Scientific inquiry Class, which prepares sophomore for SIR by developing skills and experience of writing a lab through personal experiment. A physics course at IMSA was entirely lab based and I am good at converting physical experiments into a written lab, which is also an important skill to possess in order work in a complex laboratory like FNAL. I always try to approach certain concept in a different angle to discover various possibilities. Also Chemistry labs at IMSA only provided the materials and students were expected to figure out the procedures on their own to derive the desired results. I truly enjoy utilizing the given materials and successfully carry out a specific lab. I highly value learning any new skills and will efficiently contribute to any projects with passion. In addition to all these basic skills, I can convert any concepts into a simple sketch or a model. I am capable of building any 3D computer models using Auto CAD, physical model using balsawood and various other materials, and utilizing 3D printer. I would like to use my skills to help display or even explain physics phenomenon with aesthetic visuals.

Prior Research (SIR) Experience (include advisor name/location): None

Computer Proficiency: Please indicate your skill level for each of the below.

	none	**introductory**	**intermediate**	**advanced**
Basic	√			
C/C++	√			
Fortran	√	√		
Java		√		
Other Languages(list)			HTML/ Javascript	
Mathematica		√		
Matlab	√			
Other Programs (list)			Auto-CAD	
Unix(Linux)	√			
Windows			√	
Mac		√		
Other OS (list)	√			

Rank Your Interests (Do not rank any area that you would not be willing to pursue an investigation in.)

_3_Accelerator Component Testing, Theory and Design
_4_Astrophysics Data Analysis, Detector Development, Theory
___Computer Networking, Computing for Analysis, Data Analysis of Experiments, Computer Simulation and Modeling
___Detector Design and Testing
_2_Electronics Design and Testing
___Instrumentation and Diagnostics
___Radiofrequency (RF) Systems
___Magnet Systems
_1_Mechanical Design and Development
___Particle Physics Phenomenology
___Particle Physics Theory
___Superconducting Technology

Attach an application that includes the following items:

- Academic honors and awards that you have received. Please limit to ten or less honors/awards that you feel are the most significant.
- Extracurricular activities, interests, and any leadership role(s). Please limit to ten or less activities/interests that you feel are the most significant.

- Explain why research at FNAL would be a benefit to you and what you expect from participation in an investigation at FNAL. (Limit your answer to 250 words or less.)
- What would you tell a FNAL scientist about yourself so that you would be selected to work with her or him? (Limit your answer to 250 words or less.)
- Explain one exceptional experience you had with STEM in the last year. (Limit your answer to 250 words or less.)

Placement at FNAL also requires:

- Fermilab Visitor ID Form (form attached)
- Proof of Medical Coverage (form attached)
- Work Permit (required of students who are under 16 years of age)
- Documentation of Immigration Status (see first page)
- Authorization for Issuance of an ID Card (form attached)
- Student Registration (form attached)

- Note that some information is repeated on the attached forms, which will be filed with the appropriate offices at FNAL once a student has a specific placement.

I understand that by submitting this application for placement at the **Fermi National Accelerator Laboratory** *I may not apply for or seek other SIR opportunities until a decision has been made about this application. Placement for SIR at FNAL is not guaranteed by submission of this application.*

Sung Jin Park	6/5/15	Soo Min Park	6/5/15
Signature of Parent/Guardian	Date	Signature of Applicant	Date

- **Academic honors and awards that you have received. Please limit to ten or less honors/awards that you feel are the most significant.**
  - 1. Science Olympiad Division C: Rocks and Minerals (2 person team) 2nd in Regionals
  - 2. Science Olympiad: Reach for the Stars (2 person team) 6th in Regionals
  - 3. Science Olympiad: 1st in Regionals Division C (NJ)
  - 4. Science Olympiad: Rocks and Minerals (2 person team): 6th in State (NJ)
  - 5. Science Olympiad: 2nd in State (NJ)
  - 6. Math Team: ICTM: 9th in State
  - 7. Math Team: ICTM: 10th in 4 person team (freshmen) in State
  - 8. Math Team ICTM: Freshmen 2nd in Regionals
  - 9. GBN Science Achievement Awards in Honors Physics 2014
  - 10. Johns Hopkins Math Award for High Honor 2013
- **Extracurricular activities, interests, and any leadership role(s). Please limit to ten or less activities/interests that you feel are the most significant.**
  - 1. I am a member of Mu Alpha Theta: the United States mathematics honor society for high schools.
  - 2. I am a representative of Sophomore Class Club and promoted class unity.
  - 3. I play the piano for church every week for English Mass at a Korean Catholic church.
  - 4. As a Junior State of America member, I learned essential skills in giving an effective speech and appropriate gestures.
  - 5. Every Wednesday, I tutored math and English to preschool to 5th graders.
  - 6. I am a board member in ASIA, a cultural club at IMSA. I learned to organize events for official programs in school.
  - 7. Wild Life of Hudson River Valley Art awards. I really enjoy drawing and interested in art as much as I am interested in physics. I would like to use my skill to help display or even explain physics phenomenon with aesthetic visuals.
  - 8. My artwork reacting to Princeton Symphony Orchestra's concert wass selected to be displayed in the Princeton Symphony Orchestra hall.
- **Explain why research at FNAL would be a benefit to you and what you expect from participation in an investigation at FNAL. (Limit your answer to 250 words or less.)**
  - As a freshmen, I was given the opportunity to visit Fermi and see the particle accelerators. I was inspired by the great facilities and equipment due to their incomparable size and quality. I not only expect advanced materials but also profound faculties who can advise me through my dream in pursuing Physics at FNAL. As a sophomore at IMSA, I was not able to fulfill my interests in physics specifically because sophomores were required to take 4 science classes. Yet, I know I would be soon experiencing and struggling to learn in the fields I am highly interested in at Fermi. I do have a strong fundamental knowledge in physics, and I am willing to put my best effort and ability to advance myself to match what Fermi requires through extra researches done outside. When given the great opportunity to participate in an investigation at FNAL, I would not only expect to gain knowledge in physics, but also make new connections with scientists in physics field. FNAL is the perfect place for me to start my career in research with its advanced equipment, detectors, and high-energy colliders. These

valuable instruments are what I can ever encounter, not even at IMSA. I would like to take advantage of the resources I am given and utilize it with my best ability to bring out the fruitful results that can advance the human condition.

- **What would you tell a FNAL scientist about yourself so that you would be selected to work with her or him? (Limit your answer to 250 words or less.)**
  - One of my greatest strength is the ability to adapt to a new environment. Ever since I stepped off the plane at JFK airport in 2009, I have had to adjust. I was born in Korea, moved five times, then I moved to New Jersey. After that I moved to Princeton and finally to Illinois. I moved from town to town, state to state, and even country to country, gaining experience and adapting to new environments and diverse cultures. I know working at FNAL will be a strikingly new environment, yet I can handle the change very easily with my past experiences. I also possess various lab skills that sufficiently contribute many lab works. A physics course at IMSA was entirely lab based and I am good at converting physical experiments into a written lab. I always try to approach certain concept in a different angle to discover various possibilities. Also Chemistry labs at IMSA only provided the materials and students were expected to figure out the procedures on their own to derive the desired results. I truly enjoy utilizing the given materials and successfully carry out a specific lab. I highly value learning any new skills and will efficiently contribute to any projects with passion. In addition to all these basic skills, I can convert any concepts into a simple sketch or a model. I am capable of building any 3D computer models using Auto CAD, physical model using balsawood and various other materials, and utilizing 3D printer. I would like to use my skills to help display or even explain physics phenomenon with aesthetic visuals. Lastly, I am always curious, and constantly seek for something new and exciting, even for something extraordinary.
- **Explain one exceptional experience you had with STEM in the last year. (Limit your answer to 250 words or less.)**
  - I never thought I would be interested in the scientific or mathematical fields, but then I was never actually faced with a true academic challenge. Then, I was given the chance to try out for Science Olympiad. This fortunate opportunity was my first step into the scientific world. I competed in the "Rocks and Minerals" category and the "Astronomy" category. "Rocks and Minerals" quickly became my favorite subject because I was attracted to the rock particles and layers, and I found myself constantly examining random rocks alongside the road without even realizing that I was blocking other people on the road. As it was expected, "Rocks and Minerals" was not a simple study; it required a lot of memorizing and there was a lot to learn. The more I had to learn, the more I got interested in Rocks and Minerals because I was able to understand the concept. By interpreting how different pressure given affect the chemical composition of minerals also opened the door to other scientific interests that I have since developed. I realize now that I was intimidated by science when I was younger because it seemed so complex. I overcome the fear and now, the complexity is exactly what intrigues me. My first encounter with science was very diffident yet I learned to go all out in a subject I really enjoyed learning. I would like to keep challenging myself at Fermi and fulfill my scientific interest with a strong dedication.

Student Name: PARK, Soomin
Date of Birth: 11/09/1998
Entry Date: 08/14/2014

Illinois Mathematics and Science Academy
School Code:140177

		Sem1	Sem2	Credit
Y14-15				
Grade 10	Literary Explorations I	A-		0.50
Grade 10	Literary Explorations II		A-	0.50
Grade 10	American Studies	B-	A-	1.00
Grade 10	Mathematical Investigations IV	B		0.50
Grade 10	BC Calculus I		B-	0.50
Grade 10	Scientific Inquiries - Chemistry		A	0.50
Grade 10	Scientific Inquiries - Physics		A	0.50
Grade 10	Scientific Inquiries - Biology	B		0.50
Grade 10	Methods in Scientific Inquiry	A-		0.50
Grade 10	Moving and Learning	A	A	0.50
Grade 10	French III	B+	A	1.00

Diane M Stegmeyer

Registrar 06/10/2015

Academic Program
All IMSA courses are college preparatory.

Explanation of Grades

A	Exceeds course requirements
B	Meets course requirements
C	Needs improvement
D	Does not meet course requirements; no Academy credit awarded
I	Incomplete, course requirements not completed when grades were issued
WF	Withdrawn from course with failing grade; no Academy credit awarded
W	Withdrawn from course; no Academy credit awarded

Pass/Fail Options

P+	Exceeds course requirements (Pass with Distinction, used only in Independent Study and Student Inquiry and Research courses)
P	Meets course requirements; Academy credit may/may not be awarded depending on course grading criteria
F	Does not meet course requirements for course taken pass/fail; no Academy credit awarded

Intersession (one week non-credit course)

S	Satisfactory completion of requirements
U	Unsatisfactory completion of requirements

GPA/Class Ranking Policy
In light of IMSA's selective admission process and in order to promote collaborative exploration and discovery, the Academy does not compute grade point averages and class rankings.

Standardized Test Scores
Standardized test scores are provided by the student.

Student Inquiry and Research
(Inquiry and Mentorship) includes on-campus and off-campus experiences in which students plan, investigate, analyze, and communicate in-depth scholarly investigation, either guided or directed, by scientists, scholars, and/or educators.

TALENT (Total Applied Learning for Entrepreneurs)
Is a program that promotes entrepreneurial applied science and technology.

Federal and State Constitution Requirements
Are fulfilled with successful completion of American Studies.

Physical Education Requirement
Is fulfilled with successful completion (pass) of physical education or wellness.

Notice to persons or agencies receiving student records:
Section 438(b)(4)(B) of U.S. Public Law 93-380 requires that this pupil record information be transferred to you only on condition that you will not permit any other party to have access to it without the written consent of a parent/guardian or eligible student.

IMSA®
Illinois Mathematics and Science Academy
1500 Sullivan Road
Aurora IL 60506
Phone 630-907-5066 Fax 630-907-5922

Illinois Mathematics and Science Academy

The World's Leading Teaching and Learning Laboratory for Imagination and Inquiry

Student Inquiry and Research
Recommendation Form

Student Name: Shannon Park graduation year 2017

Recommender Deborah Scarano dscarano@imsa.edu
(name) (email)

Recommender: The student listed above wishes to participate in the Student Inquiry and Research (SIR) Program. SIR advisors are frequently requesting additional information so your assistance is needed in recommending and evaluating students. This completed form, as a pdf file, may be sent to off-campus individuals to assist with best placement of students.

1. Please rate the student on each of the following criteria, with 5 being highest and 1 being lowest, based on your experiences with IMSA students.

Criteria	5	4	3	2	1	No basis for judgment
Motivation for the investigation	X					
Intellectual potential	X					
Ability to analyze/problem solve	X					
Teamwork skills	X					
Perseverance	X					
Maturity	X					
Works independently	X					
Communication skills	X					
Integrity	X					
Overall judgment	X					

Please comment on the preparedness of the student to participate in an independent investigation.

Shannon is very well prepared for this opportunity. She was the top student in Scientific Inquiry in Chemistry course this spring. Shannon quickly picked up difficult concepts and she often helped her peers who were having more difficulty understanding the topics we were discussing in class. She was very capable in the lab and her lab reports were very well written. Shannon was always well prepared for class and she was an active participant in all activities. In my opinion, Shannon is an excellent candidate for this opportunity.

Is there anything else that you feel a potential advisor should know about this student?

Shannon is very analytical and at the same very kind and caring. She works well independently and she works well with others. Shannon is quiet and unpretentious, but please don't underestimate her ability and her drive to excel.

Illinois Mathematics and Science Academy

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Student Inquiry and Research
Recommendation Form

Student Name Shannon Park graduation year _2017_____

Recommender Peter Dong pdong@imsa.edu
(name) (email)

Recommender: The student listed above wishes to participate in the Student Inquiry and Research (SIR) Program. SIR advisors are frequently requesting additional information so your assistance is needed in recommending and evaluating students. This completed form, as a pdf file, may be sent to off-campus individuals to assist with best placement of students.

1. Please rate the student on each of the following criteria, with 5 being highest and 1 being lowest, based on your experiences with IMSA students.

Criteria	5	4	3	2	1	No basis for judgment
Motivation for the investigation	X					
Intellectual potential	X					
Ability to analyze/problem solve	X					
Teamwork skills		X				
Perseverance		X				
Maturity		X				
Works independently	X					
Communication skills		X				
Integrity		X				
Overall judgment	X					

Please comment on the preparedness of the student to participate in an independent investigation.

Shannon is an excellent student who works very well independently. In physics class, she worked hard at the end to complete a whole extra unit on circular motion, and demonstrated excellent understanding of physics on the tests as well. Her work ethic is excellent, her problem-solving abilities are outstanding, and she does well with independent work as well. I recommend her wholeheartedly.

Is there anything else that you feel a potential advisor should know about this student?

Illinois Mathematics and Science Academy

The World's Leading Teaching and Learning Laboratory for Imagination and Inquiry

Student Inquiry and Research
Recommendation Form

Student Name Soomin (Shannon) Park graduation year 2017

Recommender Dave DeVol ddevol@imsa.edu
(name) (email)

Recommender: The student listed above wishes to participate in the Student Inquiry and Research (SIR) Program. SIR advisors are frequently requesting additional information so your assistance is needed in recommending and evaluating students. This completed form, as a pdf file, may be sent to off-campus individuals to assist with best placement of students.

1. Please rate the student on each of the following criteria, with 5 being highest and 1 being lowest, based on your experiences with IMSA students.

Criteria	5	4	3	2	1	No basis for judgment
Motivation for the investigation	x					
Intellectual potential		x				
Ability to analyze/problem solve		x				
Teamwork skills	x					
Perseverance	x					
Maturity	x					
Works independently	x					
Communication skills		x				
Integrity	x					
Overall judgment	x					

Please comment on the preparedness of the student to participate in an independent investigation.

Shannon did very good work in MSI last semester. She and her partner did a well-designed, informative project on the prevalence of academic dishonesty across classes at IMSA. They looked at frequency of responses and analyzed their data with a chi-square analysis. They found statistically significant differences that I thought were important enough to share with the principal's office. Based on what I know of her, Shannon will do an excellent job in an SIR project.

Is there anything else that you feel a potential advisor should know about this student?

Just what I said above, she has already shown me the ability in MSI to do independent research. She will do very well.